

**Amendment and Response**

Page 2 of 8

Serial No.:09/997,931

Confirmation No.: 5355

Filed: November 30, 2001

For: CIRCULAR DNA VECTORS FOR SYNTHESIS OF RNA AND DNA

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**Amendments to the Claims**

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

**Listing of Claims**

1-95. (Canceled)

96. **(Currently Amended)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide wherein the circular oligonucleotide has about 15-1500 nucleotides wherein the cell is not located inside a living whole organism.
97. **(Currently Amended)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide wherein the cell is a plant cell or an animal cell that is not located inside a living whole organism.
98. **(Previously Presented)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed

**Amendment and Response**

Page 3 of 8

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For: CIRCULAR DNA VECTORS FOR SYNTHESIS OF RNA AND DNA

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intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide wherein the cell is a bacterial cell.

99. **(Previously Presented)** The method of claim 97 wherein the cell is a mammalian cell.
100. **(Currently Amended)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide, the method further comprising cleaving the RNA oligonucleotide multimer to yield multiple copies of the RNA oligonucleotide wherein the cell is not located inside a living whole organism.
101. **(Previously Presented)** The method of claim 100 wherein the cleavage is autolytic.
102. **(Previously Presented)** The method of claim 100 wherein the RNA oligonucleotide is linear.
103. **(Previously Presented)** The method of claim 100 wherein the RNA oligonucleotide is circular.
104. **(Previously Presented)** The method of claim 100 wherein the RNA oligonucleotide is biologically active.
105. **(Previously Presented)** The method of claim 104 wherein the biologically active RNA oligonucleotide comprises a catalytic RNA, an antisense RNA, or a decoy RNA.

**Amendment and Response**

Page 4 of 8

Serial No.:09/997,931

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106. **(Previously Presented)** The method of claim 104 wherein the biologically active RNA oligonucleotide has endonuclease, exonuclease, polymerase, ligase, phosphorylase, dephosphorylase, or protease activity.
107. **(Previously Presented)** The method of claim 104 wherein the biologically active RNA oligonucleotide is capable of intramolecular ligation.
108. **(Previously Presented)** The method of claim 104 wherein the biologically active oligonucleotide comprises a ribozyme.
109. **(Previously Presented)** The method of claim 108 wherein the ribozyme is a hairpin, hammerhead-motif, or hepatitis delta catalytic ribozyme.
110. **(Previously Presented)** The method of claim 108 wherein the ribozyme is capable of *trans* cleavage.
111. **(Previously Presented)** The method of claim 108 wherein the ribozyme cleaves a target disease-associated RNA, DNA, or protein.
112. **(Previously Presented)** The method of claim 104 wherein the biologically active RNA oligonucleotide modifies the structure or the function of a target disease-associated DNA, RNA, or protein.
113. **(Currently Amended)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of

**Amendment and Response**

Page 5 of 8

Serial No.: 09/997.931

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the RNA oligonucleotide, wherein a gene encoding an effective RNA polymerase operably linked to a promoter is co-introduced into the cell wherein the cell is not located inside a living whole organism.

114. **(Previously Presented)** The method of claim 113 wherein the RNA polymerase is T7 or *E. coli* polymerase.

115. **(Currently Amended)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide wherein the circular oligonucleotide template is introduced into the cell using direct injection, electroporation, heat shock, calcium phosphate treatment, lipid-mediated delivery, or cation-mediated delivery wherein the cell is not located inside a living whole organism.

116. **(Canceled)**

117. **(Previously Presented)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide, wherein the method is performed in a cell explanted from a plant or animal.

118-119. **(Canceled)**

**Amendment and Response**

Page 6 of 8

Serial No.:09/997,931

Confirmation No.: 5355

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For: CIRCULAR DNA VECTORS FOR SYNTHESIS OF RNA AND DNA

120. **(Previously Presented)** The method of claim 117 wherein the animal is a mammal.
121. **(Previously Presented)** A method for synthesizing an RNA oligonucleotide inside a cell comprising introducing into a cell a single-stranded circular oligonucleotide template comprising at least one copy of a nucleotide sequence complementary to the sequence of the RNA oligonucleotide, such that the circular oligonucleotide is processed intracellularly to yield an RNA oligonucleotide multimer comprising multiple copies of the RNA oligonucleotide, wherein the method is performed in cell culture.
- 122-123. **(Canceled)**